

**REMARKS**

By this reply, claim 13 has been canceled; claims 1, 9, 14, 15, 17-19, 21, 22, 26 and 27 have been amended; and new claims 34-38 have been added, leaving claims 1, 2, 4-6, 9-12, 14-19 and 21-38 pending in the application. No new matter has been added by the amendments. Reconsideration and allowance are respectfully requested in view of the following remarks.

**Objection to Claims**

Claim 19 is objected to for the reasons stated on page 3 of the Office Action. In light of the amendments to claim 1, withdrawal of the objection to claim 19 is respectfully requested.

**Obviousness-Type Double Patenting Rejections**

Claims 1, 2, 4-6, 9-19 and 21-33 stand rejected **(1)** under the doctrine of obviousness-type double patenting over claims 1-34 co-pending Application No. 10/995,489, and **(2)** under the doctrine of obviousness-type double patenting over claims 1-18, 21-26, 29 and 30 of co-pending Application No. 10/950,640, for the reasons stated at page 2 of the Official Action. Claim 13 has been canceled.

Applicants will reconsider the propriety of these rejections, as well as the submission of one or more Terminal Disclaimer to obviate the rejections, once the Office indicates allowable subject matter.

**Rejection Under 35 U.S.C. § 103**

Claims 1, 2, 4-6, 9-19 and 21-33 stand rejected under 35 U.S.C. §103(a) over U.S. Patent No. 6,265,022 to Fernihough et al. ("Fernihough") in view of EP 0854 005 A2 ("EP '005") for the reasons stated at pages 4-7 of the Office Action. Claim 13 has been canceled. The rejection is respectfully traversed.

Claim 1, as amended, recites a method of protecting a local area of a gas turbine component from the effect of a thermochemical or mechanical processes carried out on a surface of the component. The method comprises "applying a masking material to a local area or to local areas on the gas turbine component in two or more layers, such that the uppermost layer or uppermost layers of the masking material containing the highest volume fraction of at least one filler material; at least partially thickening at least one of the layers of the masking material before applying the next layer of the masking material; carrying out the thermochemical process or a mechanical process; and removing a portion of the masking material from the local area or the local areas by heating the masking material and removing the filler material from the local area or the local areas by a separate step" (emphasis added). Support for the amendments to claim 1 is provided, for example, at paragraphs [0014], [0015], [0038], [0040], [0042] and [0043] of the present specification.

The method of claim 1 includes the step-wise application of layers of the masking material such that the uppermost layer, or the uppermost layers, of the applied masking material contain the highest volume fraction of the filler material. For example, as recited in claim 15, in an embodiment of the method, "the masking material of the uppermost layer or uppermost layers contains 30 – 80 vol.-% filler

material with a grain size of 40 – 150  $\mu\text{m}$  to a depth not less than 1 mm.” As recited in claims 17 and 18, respectively, in other exemplary embodiments, the filler material content of the uppermost layer or uppermost layers of the masking material can be in the range of 10 – 90 vol.-%, or 20 – 60 vol.-%.

The Office Action acknowledges that Fernihough fails to suggest applying the plug material in a “step-wise fashion,” but contends that step-wise application of the plug material is a mere duplication of parts, or a splitting of one step into two. The Office Action also contends that it would have been obvious to determine the optimum amount of filler in each layer of plug material through routine experimentation. Based on these statements, the Office Action appears to contend that the step-wise application of the layers of the masking material according to the claimed method merely amounts to breaking the step of applying the masking material into a number of identical (or “duplicate”) steps. Applicants respectfully submit that this position fails to consider the claimed method as a whole, as well as the advantages that it provides.

According to the method recited in claim 1, the mask material is applied to at least one local area, such as a cooling hole, to protect the local area(s) from effects of thermochemical or mechanical processes. The filler material is applied in the highest volume fraction in the uppermost layer or uppermost layers of the masking material. As such, every layer of the masking material does not contain the same volume fraction of the filler material. Thus, all of the layers of the masking material are not identical to each other. As such, the steps of applying the masking material in layers are not all “duplicate” steps, but are distinct steps.

Moreover, applying the masking material in layers having varying filler material contents provides advantageous technical effects that are not suggested by the applied references. In the claimed method, the filler material contained in the uppermost layer, or the uppermost layers, gives the mask material in the area(s) to be protected enhanced resistance to the thermochemical or mechanical processes. However, in the layer(s) below the uppermost layer or the uppermost layers, the filler material does not need to be added in a significant amount (1) because the method does not affect the lower layers of masking material, and (2) it is advantageous to have less or even no filler material in such lower layer(s).

Also, for removing the masking material from the local area(s) after the thermochemical process or mechanical process is carried out, the local area(s) is/are heated to a sufficiently high temperature so that a portion of the masking material is removed, i.e., a base portion of the masking material is removed by heating. For example, the portion of the masking material can be volatilized or burned by the heating. However, the filler material contained in the masking material has a melting temperature that is higher than the temperature to which the masking material is heated. Consequently, the filler material is not removed from the local area(s) by the heating. This remaining filler material is removed by a separate step, such as manually or by using a three-dimensional vision system and drilling the area out. The less filler material that is left in the area, the less difficult and time consuming is the removal process. As such, when the uppermost layer or uppermost layers of the masking material contain the highest volume fraction of the filler material, the removal process is simplified. See, for example, paragraphs [0015], [0042] and [0043] of the present specification.

In contrast, Fernihough does not suggest the application of filler material in layers, much less “applying a masking material to a local area or to local areas on the gas turbine component in two or more layers, such that the uppermost layer or uppermost layers of the masking material containing the highest volume fraction of at least one filler material,” as recited in claim 1. Moreover, Fernihough does not disclose or suggest measures for removal of the plug material, or problems encountered in such removal that need to be addressed in the treatment of gas turbine components.

EP '005 provides no teaching, suggestion or motivation to modify Fernihough's process to result in the claimed method, including, *inter alia*, the step of applying the masking material and the recited removing of the masking material. Thus, because the combination of applied references does not teach or suggest all of the features recited in claim 1, the references do not support a *prima facie* case of obviousness. See M.P.E.P. § 2143.03. Moreover, the advantageous effects provided by the claimed method are sufficient to rebut the alleged *prima facie* obviousness. Accordingly, Applicants respectfully submit that claim 1 is patentable.

Claims 2, 4-6, 9-19 and 21-33 depend directly or ultimately from claim 1 and thus are also patentable over the applied references for at least the same reasons as those for which claim 1 is patentable.

Therefore, withdrawal of the rejection is respectfully requested.

### **New Claims**

New claim 34 depends from claim 1 and recites that at least a lowermost layer of the masking material is free of the filler material. As described in paragraph

[0038] of the present specification, polymerization of the filler material can be more rapidly carried out on “pure polymer” (i.e., masking material without filler material). Such pure polymer can be applied as at least a first layer of the masking material.

Independent claim 35 recites features of claim 1 and includes the step of “removing a portion of the masking material from the local area or the local areas by burning the masking material and removing the filler material from the local area or the local areas by a separate step” (emphasis added). Claim 36 depends from claim 35 and recites the features recited in claim 34.

Independent claim 37 recites features of claim 1 and includes the step of “removing a portion of the masking material from the local area or the local areas by heating the masking material to volatilize the portion of the masking material and removing the filler material from the local area or the local areas by a separate step” (emphasis added). Claim 38 depends from claim 37 and recites the features recited in claim 34.

**Conclusion**

For the foregoing reasons, allowance of the application is respectfully requested. If there are any questions concerning this response, the Examiner is respectfully requested to contact the undersigned at the number given below.

Respectfully submitted,

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